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# Soviet Defense Spending: Recent Trends and Future Prospects



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An Intelligence Assessment

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# Soviet Defense Spending: Recent Trends and Future Prospects



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An Intelligence Assessment

This assessment was prepared by [redacted]  
Econometric Analysis Division, and [redacted]  
[redacted] Policy Analysis Division, both of the  
Office of Soviet Analysis. [redacted] Defense  
Industries Division, also contributed.

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Comments and queries are welcome and may be  
directed to the Chief, Econometric Analysis Division,  
[redacted] or the Chief, Policy Analysis Division,  
SOVA, [redacted]

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**Soviet Defense Spending:  
Recent Trends and  
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**Key Judgments**

*Information available  
as of 1 June 1983  
was used in this report.*

The Soviet commitment of resources to defense as measured in constant 1970 rubles has increased each year since the early 1960s, and the share of GNP devoted to military programs remains more than twice that of the United States. New evidence, however, incorporated in our latest estimate of Soviet defense spending, indicates that in at least one major area, procurement of military hardware, the Soviets apparently have not maintained their past momentum. Although procurement has continued at a high level, well in excess of US outlays, we now estimate that there has been little real growth in this component of Soviet defense spending since 1976.<sup>1</sup> This is a change from our last estimate, prepared in 1981, at which time we indicated that the average annual growth of procurement had fallen to less than 3 percent in the late 1970s, but then projected it would return to its long-term growth pattern in the early 1980s.

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The extended procurement plateau we now estimate is on the basis of new evidence which suggests that little or no growth occurred in the three categories that make up the largest shares of procurement—ships, aircraft, and missiles. These areas comprised over 60 percent of cumulative procurement expenditures during 1976-81.

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Because procurement accounts for nearly half of Soviet defense spending, its growth largely determines the overall trend in defense expenditures. We now estimate that growth in total Soviet defense outlays since 1976 has averaged about 2 percent annually, compared with the 4-percent growth we had earlier calculated. Moreover, the share of GNP committed to defense—previously reported to have increased by a percentage point in the late 1970s—is now believed to have held at a fairly constant 13 to 14 percent (compared with roughly 5 percent in the United States). This reflects both a slight upward adjustment in the level of our defense spending estimate in the late 1960s and early 1970s and the fact that the recent reduction in the growth of military expenditures coincided with a period of slower growth for the economy as a whole.

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We can identify several major factors that have dampened the growth in defense outlays since 1976, although we cannot be sure that they fully explain the trend. Initially, at least, the absence of growth in military procurement probably can be attributed principally to natural lulls in production as older weapon programs were phased out before new ones began. The extended nature of the slowdown, however, goes far beyond normal dips in procurement cycles, which usually have lasted no more than a year or so [redacted]

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The continued slow growth of military production since the late 1970s seems to have been related more to a combination of factors involving technological problems, industrial bottlenecks, and policy decisions:

- [redacted] a number of major weapons ran into technical delays that pushed their serial production back at least a couple of years. In other areas, the Soviets apparently have had problems manufacturing systems even when testing was completed successfully. 25X1
- [redacted] raw material, energy, and transportation bottlenecks disrupted military production, although the evidence is largely scattered and we cannot measure the extent of their impact on procurement. 25X1
- Finally, [redacted] Moscow, either anticipating these problems or in response to them, may well have taken steps to stretch out some military procurement programs. Decisions to comply with the SALT I and unratified SALT II agreements also tended to slow the pace of procurement growth in certain areas [redacted] 25X1

The new trend we have observed in Soviet military procurement, together with continuing Soviet economic problems and the recent political succession, raise important questions about the future of the Soviet defense effort. We previously had estimated that Soviet defense spending would continue to grow in real terms through at least 1985. We still consider that likely. The question is whether the Soviets will rebound quickly from the procurement slowdown, so that defense spending will return to (or even exceed) the 4-percent average annual growth rate of 1966-76, or whether the trend of little or no growth in procurement will slow the increase in overall expenditures for some time. Because we do not fully understand the causes of the slowdown, we cannot provide a confident answer. [redacted]

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The Soviets have steadily expanded their military R&D and production facilities, and these provide a basis to increase the growth of procurement, if they choose to do so. They will have to make available the requisite inputs and solve technical and manufacturing problems. The long-run cost to the economy and to the ultimate health of the defense industrial base, however, could be substantial, and some of the bottlenecks could prove difficult to overcome. [REDACTED]

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Alternatively, and perhaps more likely, they could choose to maintain the trend of little or no growth in procurement in the hope of strengthening the economy for a long-term military competition. Current Soviet military spending is so large that, despite the procurement plateau noted, the Soviet forces have received some 2,000 ICBM and SLBM missiles, 5,000 tactical combat and interceptor aircraft, 65 SSBN and attack submarines, and 31 major surface combatants since 1975. Thus, even with reduced growth, they could still introduce many new systems and continue to improve their forces throughout this decade. They have already introduced more than 40 new major weapon systems since 1981 and could field more than 60 additional systems by 1985. [REDACTED]

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The reader should be cautioned that trends in Soviet military expenditures are not a sufficient basis to form judgments about Soviet military capabilities. Physical stocks of weapons, training, doctrine, generalship, the circumstances surrounding a potential conflict, and other factors must be considered in judging military capabilities. These are not treated in this analysis. [REDACTED]

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## Soviet Defense Spending: Recent Trends and Future Prospects

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### Introduction

This report describes our most recent estimate of Soviet defense spending in rubles and its implications. It begins with a brief statement on the purpose of the ruble estimate and the limitations in the methodology we use. It then reviews historical trends of Soviet defense spending through 1981, focusing on the factors behind an apparent plateau in procurement of military hardware since 1976. Next, it assesses prospects for future defense spending. Finally, in appendixes A, B, and C we present (a) a detailed discussion of the methodology we use to generate our ruble estimates; (b) a comparison of our present estimate with previous CIA estimates of Soviet defense spending and estimates derived from alternative methodologies; and (c) more comprehensive analysis of the uncertainties associated with the defense spending estimate.

The ruble estimate is intended as an indicator of the level and trend in the volume of Soviet resources devoted to defense. It allows us to assess the burden of the defense effort on the Soviet economy and, conversely, to examine the effect of economic factors on the defense effort. By comparing defense spending trends for major classes of weapon systems, the ruble estimate also helps us to gauge the relative priorities assigned by the Soviets to various military missions.

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In the ruble estimate, we use constant prices (1970 is the base year) so that we can measure the real growth in defense—that is changes in military manpower, the volume of procurement and construction, and the scale of RDT&E and O&M—excluding the effects of inflation, as well as identify some of the considerations that Soviet leaders must take into account when they draw up plans for their future defense effort. This is the accepted Western method for economic analysis of real trends in national output; in the United States, for example, economists use estimates in constant 1972 dollars for these purposes.

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### Purposes and Limitations of the Ruble Estimate

The CIA makes two estimates of the cost of the Soviet military effort, one in dollars and the other in rubles. Both estimates derive fundamentally from the same detailed estimates of Soviet defense programs. The dollar estimate of Soviet defense programs is used to make aggregate comparisons with comparable US defense outlays. We make the comparison in a common currency to summarize the quantity and quality differences between US and Soviet defense activities. In our most recent dollar estimate, our analysis showed Soviet defense activities grew during the early and mid-1970s at an annual average rate of 4 percent, but they fell to less than 2 percent after 1976 as a result of little growth in procurement.

In the United States, and presumably in the USSR, budgetary discussions, however, are often conducted in terms of current price data. We do not have access to current Soviet defense budget figures, and our information at present is inadequate to update the price base to a more recent year. Thus, our defense spending estimates do not replicate the figures the present Soviet leaders consider in discussing their own defense issues. Figures on actual defense outlays measured in current prices, if available, would show higher growth than our constant price estimates because of inflation that characterizes the Soviet economy generally. Since so much of Soviet planning is conducted in physical rather than financial terms, there is undoubtedly considerable information available to the leadership that would identify the real trends underlying such current price data.

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It should be noted that both our dollar and ruble estimates for 1980 and 1981 are heavily influenced by lead costs associated with weapons expected to be completed in the succeeding two to three years and are subject to greater uncertainty. As more information becomes available, changes in our estimate could result.

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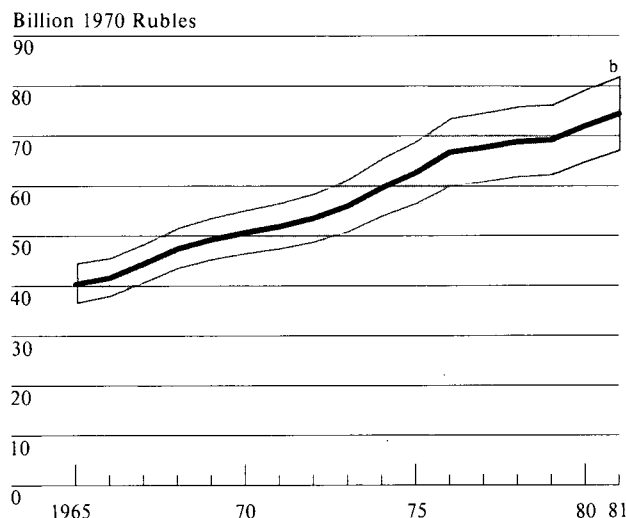
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**Figure 1**  
**USSR: Estimated Defense**  
**Expenditures, 1965-81<sup>a</sup>**



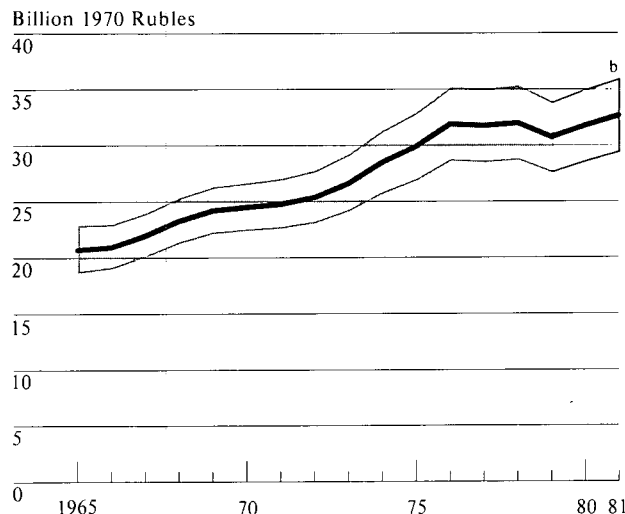
<sup>a</sup> The shaded area represents the confidence interval for each year's estimate of total defense expenditures. The width of the interval changes over time as the weight of the component estimates that make up the total and our confidence in them vary. We believe there is less than a 10-percent chance that the true figure for any given year lies outside this interval.

<sup>b</sup> It should be noted that our estimates for 1980 and 1981 are heavily influenced by lead costs associated with weapons expected to be completed in the succeeding two to three years. As we collect additional information on activities in those years, changes could result.

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Moreover, as discussed in appendix C, generally higher raw materials costs, slippages and disruptions in procurement programs stemming from industrial bottlenecks, and problems in mastering new technologies have imposed real costs on the Soviet economy that we cannot capture in our 1970 ruble prices. In this regard, the Soviets introduced a major price reform in January 1982—the first since 1967—to better align production costs and profit margins between sectors of the economy. We have in progress a major research effort that will allow us to move our estimates to 1982 prices as soon as practical. We are aware that if a more recent price base were used, the level of expenditures would be nominally higher, reflecting the general inflation that has occurred in the economy as a whole. The share of resources going to the military, measured as a percentage of GNP, would not necessarily be higher, however. This would

**Figure 2**  
**USSR: Military Procurement**  
**Expenditures, 1965-81<sup>a</sup>**



<sup>a</sup> The shaded area represents the confidence interval for each year's estimate of procurement expenditures. The width of the interval changes over time as the weight of the component estimates that make up the total and our confidence in them vary. We believe there is less than a 10-percent chance that the true figure for any given year lies outside this interval.

<sup>b</sup> It should be noted that our estimates for 1980 and 1981 are heavily influenced by lead costs associated with weapons expected to be completed in the succeeding two to three years. As we collect additional information on activities in those years, changes could result.

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depend on the different rates of price change for defense and the civilian sector. That work notwithstanding, we believe these factors are unlikely to change our basic conclusion that defense spending growth has slowed since 1976.

#### Soviet Defense Spending: Trends Since 1965

Under Brezhnev, total Soviet defense spending, defined as the Soviets might view it, grew in real terms at roughly 4 to 5 percent annually from 1966-76. The growth in military expenditures in this period was caused by the rapid expansion of Soviet general purpose forces—both hardware and manpower—as well as the expansion and continued modernization of Soviet intercontinental and theater nuclear forces, which had begun under Khrushchev.

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### *Assessment of Confidence in New Estimates*

*Our estimate of Soviet military expenditures is subject to uncertainty. Consequently, we have assessed the kinds of uncertainty in our building-block approach that could cause inaccurate measures of real growth rates and the share of national resources devoted to defense. Key uncertainties include: production estimates of large programs; the cost of the relatively more sophisticated Soviet weapon systems; and increases in real resource costs of defense production since the mid-1970s in light of structural changes in the economy.*

*To assess the first two areas of uncertainty, we selected several major weapon programs that were prominent in resource terms and therefore possible sources of an inaccurate estimate of growth in military procurement. Our goal was to determine if the uncertainty associated with the costs of these programs was sufficient to change our perception of the trend in procurement and overall defense spending. To gauge the third source of uncertainty—the effect of structural change in the economy on procurement costs in general—we examined productivity trends in the machine-building and metalworking sector where most military production takes place. Here our concern was to see if our measure of military machinery output was understating the resources required for production.*

*We believe the results of our uncertainty analysis allow reasonable confidence in the level and trend of the estimates. For example, we found that actual costs for the most expensive and complex systems would have to be twice our present estimate to raise our estimate of procurement growth to historical rates. Our experience suggests that an error of this magnitude is unlikely. In the case of the third source of uncertainty—changing real resource cost stemming from changes in productivity not captured in our analysis—industrial productivity analysis indicates no alteration to the judgment that procurement growth has slowed significantly since 1976.*

*We have also looked at other approaches to estimating Soviet defense spending—both the total and the procurement component—as another means of assessing confidence in the direct cost estimates. It was found, however, that these alternative methods are not very useful for this purpose. The estimates, which are developed from Soviet aggregate economic and financial statistics, are in current prices and of unknown coverage. Any estimates derived from such methods are necessarily subject to a wider margin of uncertainty than those calculated from a direct cost approach.*

Our current estimate, however, shows a much slower growth of Soviet defense spending since 1976, about half the annual average rate of the previous 10 years (see figure 1). The decline of growth in total spending results from almost no growth in military procurement during 1976-81. As shown in figure 2, procurement appears to have declined slightly during 1977-79, and then to have returned to its 1976 level by 1981.

Our current estimate of flat procurement since 1976 differs from our last estimate, published in 1981, in which we stated that the average annual growth in procurement had fallen to less than 3 percent in the late 1970s, but then projected—based on estimated

Soviet military production capabilities and force requirements—that it would return to its long-term growth pattern in the early 1980s.<sup>3</sup> Hard evidence on actual production levels, however, clearly demonstrates a continued depressed procurement rate. Specifically, our analysis shows that procurement rates have essentially leveled off since 1976. Nevertheless, it should be stressed that, even with our revised estimate, military procurement during 1976-81 continued at a very high level. Large quantities of

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military hardware were delivered to the armed forces during this period, including about 31 major surface combatants, 2,000 ICBMs and SLBMs, 5,000 tactical combat and interceptor aircraft, and 15,000 tanks. [ ]

Because procurement comprises approximately 50 percent of our defense spending estimate, the slowdown in its growth strongly influences the overall trend. We are continuing to evaluate the new evidence on procurement and are also trying to improve other portions of the estimate, particularly expenditures for RDT&E, which currently is about a fourth of total defense spending and subject to particular uncertainty. Consequently, our estimate is subject to further refinement as the analysis proceeds. [ ]

To gauge the possible impact of uncertainties inherent in our estimative methods, appendix C presents an analysis of the sensitivity of our conclusions to possible errors in estimated production rates and prices. It shows that, on the basis of historical experience, any errors or bias in our price or quantity estimates are almost certainly not so great as to alter the conclusion that a slowdown in the growth of procurement and overall defense spending has occurred (see inset, page 3). [ ]

#### Trends in Major Procurement Categories and Comparisons With the 1981 Estimate

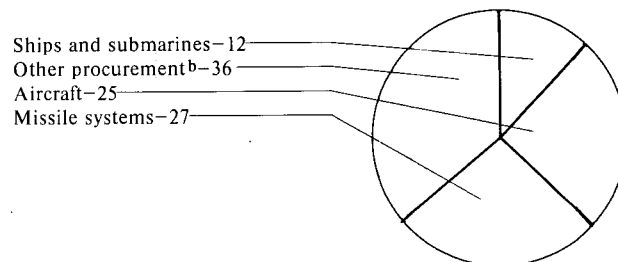
The plateau in procurement noted since 1976 reflects relatively slow or negative growth in its three major components—naval ships, missiles, and aircraft (see figure 3). This differs from our 1981 estimate, which showed growth during 1976-81 for all of these categories. [ ]

**Naval Procurement.** Procurement of major surface combatants and submarines—which comprise approximately 90 percent of total naval procurement—provided considerable growth impetus during 1965-76. Growth in that timespan showed average annual increases of over 5 percent, but in the period since 1976, growth has been slower—about 3 percent (see figure 4). [ ]

Our latest estimate of expenditures for naval ship procurement programs since 1976 is significantly different from our previous estimate. Changes in recent ship construction activity have contributed to

Figure 3

USSR: Shares of Total Estimated Military Procurement Expenditures, by Weapon System: Cumulative 1976-81<sup>a</sup>  
Percent



<sup>a</sup> Based on estimates in 1970 rubles.

<sup>b</sup> Includes land armaments, general purpose vehicles, electronic systems, and miscellaneous support equipment for the military forces.

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the revision. We based our previous estimate on projected force requirements, historical completion rates for older systems, and shipyard capacities. [ ] the Soviets have not met the construction schedules we had anticipated. [ ]

The slowing in the annual growth of naval ship procurement during 1977-81 corresponds to an absolute decline in total tonnage of naval units constructed in this period.<sup>4</sup> Though higher unit costs for the successive classes of naval units have helped to offset the impact of the absolute decline in total tonnage produced, they have not been large enough to sustain the rate of growth in expenditures during 1966-76. [ ]

<sup>4</sup> Analysis of naval production during 1982 and preliminary estimates for 1983 indicate that delivered naval tonnage has increased from the average delivered tons in the 1977-81 period. [ ]

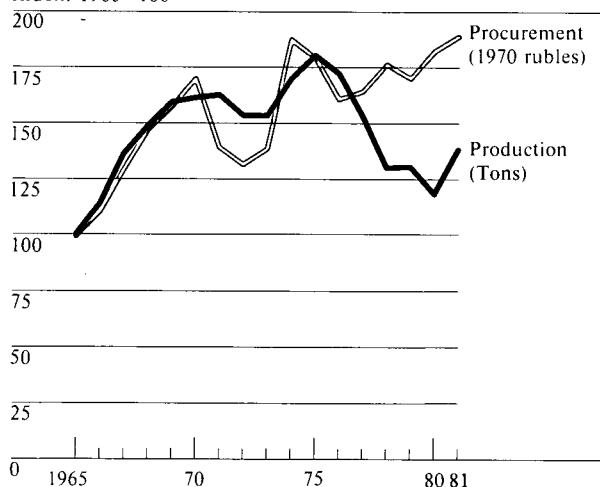
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**Figure 4**  
**USSR: Estimated Production and Procurement Expenditures for Major Surface Ships and Submarines, 1965-81**

Index: 1965=100



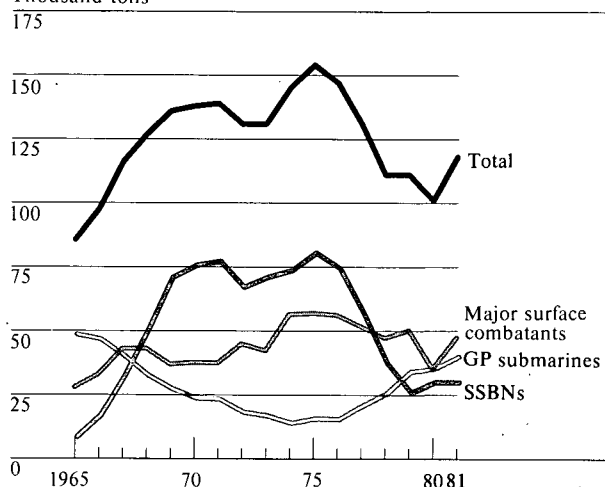
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The absolute decline in the total tonnage measurement was caused by a slowdown in production of nuclear-powered ballistic missile submarines (SSBNs). As a result of a shift to more complex designs with longer construction times as well as a decision to remain within the limits imposed by the SALT accords (see discussion on pages 13-14), Soviet production of SSBNs—which during 1965-81 made up about 40 percent of cumulative tonnage produced—has shown a rapid decrease since the mid-1970s. This more than negated a steady growth in the production of general purpose submarines and major surface combatants over the same period (see figure 5).

Growth in the output of general purpose units also was lower than projected. These include a new class of guided-missile destroyer, an aircraft carrier, a nuclear-powered cruise missile submarine, and a diesel-powered attack submarine. For example, in 1980 it appeared that three of the 445F guided-missile cruisers and three of the Sovremennyy-class guided-missile destroyers would be completed by 1982. In fact, only one of each of these new classes was

**Figure 5**  
**USSR: Estimated Annual Production of Major Surface Combatants, SSBNs, and General Purpose Submarines, 1965-81**

Thousand tons



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completed. In addition, the Soviets also appeared capable of completing the third Kiev-class aircraft carrier in 1981, though it was not finished until early 1982.

Furthermore, recent diesel submarine production has remained steady at about four units per year, but production of the new K-class—designed to replace the 1950s-vintage W and R classes—has been slower than originally projected. We had expected completion of four K-class units by 1981, but only two appeared by that date and production continues at the rate of one per year. For reasons as yet undetermined, the large and costly Typhoon-class ballistic missile submarine and the O-class cruise missile submarine are also being produced at the relatively slow rate of about two units of each class every three or four years compared with previous classes of SSBNs. Moreover, the first unit of a new nuclear-powered submarine (SSN) class, which was expected to follow the V-III in 1982, did not appear until this year.

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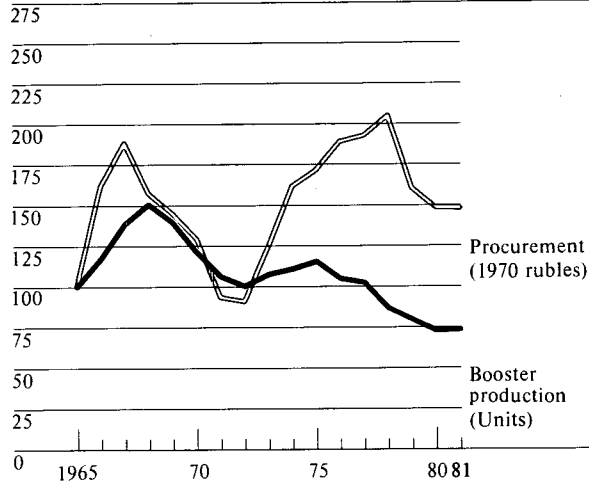
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**Figure 6**  
**USSR: Estimated Booster Production and**  
**Total Procurement Expenditures for ICBMs**  
**and SLBMs, 1965-81**

Index: 1965=100



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**ICBM and SLBM Procurement.** ICBM construction—another factor that helped to drive up Soviet procurement—exhibited strong growth as well over the 1965-76 period, but there were two clear procurement cycles (see figure 6). The first cycle covering 1965-70 reflects production of the third-generation ICBMs—the SS-9, SS-11, and SS-13. The impetus behind the second surge of ICBM procurement that began in the early 1970s was the deployment of the SS-17, SS-18, and SS-19 fourth-generation missiles. The SS-16 was also produced in limited numbers during this period, though its deployment was banned by the unratified SALT II Treaty. Procurement expenditures for fourth-generation ICBMs peaked around 1978 and then declined in absolute terms through 1981.<sup>5</sup>

<sup>5</sup> The expenditure index continued to grow during 1975-78—while booster production was declining in absolute terms—because of expenditures for “front-end” improvements, such as upgrading RV packages and guidance and control units on existing boosters, in the late 1970s.

SLBM procurement—generally only about one-fourth the size of ICBM procurement—has been relatively stable since the early 1970s. This is because, unlike the procurement cycles exhibited by ICBMs, SLBM programs have tended to follow one another in succession. For example, as the SS-N-6 production slowed in the mid-1970s, the Soviets already had begun production of the SS-N-8, which was followed closely by SS-N-18 production.

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**Aircraft Procurement.** Another major source of growth during 1965-76 was military procurement of aircraft, principally several new tactical fighter-bombers and interceptor aircraft that were both more capable and more costly than previous aircraft (see figure 7). These included variants of the MIG-21 (Fishbed) and MIG-25 (Foxbat) interceptors and swing-wing fighters such as the SU-17 (Fitter C) and MIG-23 (Flogger.)

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Since 1977 we have seen a decline in fighter aircraft procurement, causing an absolute drop in total expenditures for aircraft procurement. Although this trend was noted in our previous estimate, there have been some minor revisions downward. For instance, on the basis of deployment patterns for previous generations, we had expected greater numbers of MIG-31s (Foxhounds) to be deployed with Air Defense units in the early 1980s. New evidence indicates this has not occurred.

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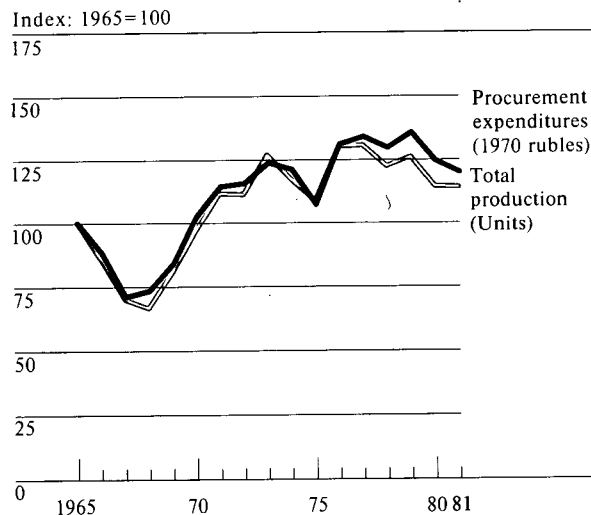
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**Figure 7**  
**USSR: Estimated Production and Procurement Expenditures for Fighter Aircraft, 1965-81**



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In addition, in the 1981 estimate we had projected a rate of production for the SU-25 aircraft of six per month on the basis of likely deployment requirements and production resources available at its place of manufacture.

the program was more modest than originally estimated—three to four aircraft per month. This may reflect plant startup problems and a wait-and-see attitude on its combat performance in Afghanistan.

**Other Procurement.** Other procurement categories have shown less dramatic changes over time. Spending on land arms, for example, including tanks, artillery, and armored combat vehicles, continued to show positive growth through the late 1970s and early 1980s, albeit at rates somewhat below historical trends, as improved models were assimilated into production. This expenditure growth is the result of the introduction into the force of more sophisticated

and costly armament such as the T-72 and improved T-64 tanks, and new models of self-propelled artillery including nuclear-capable weapons.

Our estimate of the trend in remaining procurement categories also has not changed significantly in comparison with our previous estimate. This includes such categories as general purpose vehicles, electronic systems, and miscellaneous support equipment for the military forces.

#### Factors Behind the Procurement Slowdown

The major procurement programs that have contributed most to our revised downward estimate are listed in the table on page 8. It also identifies, where possible, the reasons that caused these programs to change. In general, they involve technological problems, economic bottlenecks, and policy decisions. We cannot be sure, however, that the factors alone, or even in combination, fully explain the trends of the past five to six years. Nor can we assign any specific weight to the factors we have identified. Indeed, CIA analysts differ over the relative importance of each, especially the extent to which policy decisions may have played a role.

Initially, at least, the limited growth in military procurement probably can be attributed largely to natural lulls in production as new weapon systems were phased in. Production cycles for major weapon systems—ICBMs, submarines, and aircraft—regularly introduce fluctuations in the rate of growth of procurement spending as older systems are phased out of production and retooling for the next generation occurs. Some of these effects are clearly discernible during the mid- and late 1970s, when deployment of fourth-generation ICBMs neared completion. Others are illustrated by some of the programs cited in the table in which changeovers to new or improved models may have affected production rates.

This flat procurement trend, however—involving a wide array of hardware for strategic and conventional forces and extending for five years—cannot be attributed to normal dips in production related to the

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procurement cycle. These have usually lasted no more than a year or so. Indeed, such a prolonged stagnation has not occurred since the late 1950s, when Khrushchev reduced Soviet defense spending. What evidence we have seems to suggest that the absence of growth in military procurement since the late 1970s is related to a combination of factors involving technological problems, manufacturing constraints within the Soviet defense industries themselves, industrial bottlenecks, and policy decisions.

***Soviet Procurement Plans.*** We do not have specific reporting on what the original procurement plans were for the 10th Five-Year Plan (FYP), which covered 1976-80. There is good circumstantial evidence on the basis of statements by the Soviets during the Plan's formulation in 1974 and 1975 that they wanted to substantially upgrade the quality of military hardware to counter Western programs—such as the Trident submarine and M-1 tank—that they

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considered particularly threatening. Judging from their statements and economic plans, they also were guardedly optimistic about the ability of their economy to support military needs. [REDACTED]

*Technical Difficulties.* Since the mid-1970s, the USSR has encountered technical difficulties in developing a number of major weapon systems. Although problems in design or on the test ranges are nothing new, some of the delays encountered during this period were unusually long. [REDACTED]

Taken together, these factors suggest that the leadership may not have been expecting an extended period of flat procurement lasting into the 1980s. Moreover, as noted in the table, some of the programs that have contributed to the slowdown ran into technical and manufacturing problems that the Soviets probably could not have fully anticipated. Thus, although the Soviet Defense Council, with Brezhnev as its chairman, may have expected a slowdown in procurement growth during the first part of this period as production of several major systems wound down, it may also have been looking for somewhat faster output in the latter part of the decade. [REDACTED]

*Problems With Procurement.* Whatever the original procurement plan for 1976-80, it is clear that technological problems and industrial bottlenecks during this period began to affect the ability of the Soviet defense industries to turn out military hardware. [REDACTED]

[REDACTED] raw material, energy, and transportation bottlenecks disrupted military production. The evidence, however, is scattered, and we cannot judge the impact of these bottlenecks on procurement. Finally, policy decisions taken as a result of SALT I and II, as well as in response to economic problems, probably played some role in the procurement slowdown, although they clearly, by themselves, do not fully explain the recent phenomenon. [REDACTED]

The extensive delays associated with these systems reflect a general trend in Soviet weapons development that probably had some bearing on military procurement during this period. [REDACTED] the

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development times for ICBMs, fighter aircraft, nuclear submarines, and other major categories of weapons have increased steadily during the past two decades. The titanium-hulled A-class submarine, for example, took some two decades to develop. Moreover, of the new systems currently under development, a greater number than in the past require substantially more resources to develop, possibly reflecting the incorporation of more high technology than is typical for a new Soviet weapon system. As such, these systems may well involve greater developmental and resource risks. In short, Moscow's efforts to alter the character of its future forces by placing a greater stress on relatively expensive systems incorporating more advanced technologies may have contributed to the recent procurement trend. [REDACTED]

*Manufacturing Constraints.* Even after production has begun, it appears that the Soviets have had problems achieving a high level of serial production with some systems in recent years because of continued problems with design or manufacturing constraints within their defense industries. The substantially higher performance of many of the new systems currently in production often hinges on manufacturing technologies only fairly recently available in the USSR. Although the Soviets traditionally have had difficulty coping with the manufacturing requirements of new technologies on the plant floor, the larger share of relatively complex systems in the current generation of weapons apparently has resulted in much greater losses and disruptions to production. [REDACTED]

In the USSR, at the plant level there is a pervasive lack of adequate testing and quality control equipment. Consequently, even plants able to manufacture more advanced weapon components based on new technologies have had difficulty meeting output targets. [REDACTED]

*Industrial Bottlenecks.* Beyond the specific problems just discussed, a third factor that seems to have contributed to some extent to the recent procurement

trends has been the precipitous drop in the growth of Soviet industrial output as a whole, largely as a result of an absolute drop in factor productivity. Faltering under the strains of increasingly severe transportation snarls and inadequate supplies of raw materials, Soviet industry has expanded at an annual average rate of about 3 percent since 1976, about half the 1971-75 rate. Moreover, during the past two years, industrial growth has averaged less than 2.5 percent annually—a postwar low. [REDACTED]

Although most of our evidence is anecdotal, it appears that shortfalls in the planned production of key industrial commodities since the mid-1970s—especially steel, oil, coal, and construction materials—have not only contributed to a sharp slowdown in the production of civilian investment goods in recent years, but disrupted military procurement plans as well, despite the top priority traditionally accorded Soviet defense industries. Although production shortfalls are common in the Soviet economy, the stringencies encountered during this period have been severe.

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***Impact of Manufacturing Constraints on Soviet Defense Industries***

*Military production since the mid-1970s has been disrupted by manufacturing constraints within the Soviet defense industries themselves. In particular, there is evidence of shortages of components for weapon systems that depend on manufacturing techniques that are relatively new in the USSR. Although similar problems were noted in the 1960s, it is impossible to judge how much of a change this represents from the past.*

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*Generally, these shortages are the result of quality control problems. Although the Soviets have the know-how to produce high-technology components, many are of unacceptable quality. This has been true even in turnkey facilities from the West. Because no counterpart production exists in the USSR, Soviet designers often have to rely on the nominal or rated capacity of manufacturing equipment and processes purchased when they plan future production activities. Western equipment, however, often fails to perform as well in the Soviet manufacturing environment.*

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In short, since the mid-1970s, as industrial bottlenecks have gotten worse, production of military hardware—despite the number-one priority given defense—apparently has been increasingly disrupted.

procurement in some areas when drawing up procurement plans for the 10th FYP. Although the leadership probably was not expecting a five-year period of flat procurement—for the reasons previously cited—it could well have decided to hold procurement growth to less than the historic rate of 4 percent to channel more resources into consumption and investment.

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*Policy Decisions.* Finally, the Soviet leadership, perhaps anticipating some of the problems just discussed, may have made a deliberate policy decision to slow

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In any case, whether a formal policy decision was made during the formulation of the plan itself—and we have no specific evidence that one was—the leadership must have recognized that technical problems and industrial bottlenecks were hampering procurement by the late 1970s. Nevertheless, Moscow apparently chose not to reallocate additional resources to defense either because of competing demands in the rest of the economy or because it believed that even a large-scale diversion of resources would not solve its technical problems, at least in the near term.

Policy decisions to comply with SALT I and the unratified SALT II agreements also may have affected the pace of procurement, although they certainly did not prevent an appreciable upgrading of Soviet strategic forces. SALT I, for example, banned construction of additional ICBM silos and limited the number of modern SLBM launchers and modern SSBNs permitted to each side. Since negotiation of the Interim Agreement, therefore, Soviet procurement of new ICBM and SLBM launchers has been

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governed by a framework that establishes maximum limits on permitted deployment. It requires compensatory dismantlement of operational units, in the case of SSBNs and SLBM launchers, if additional deployment occurs. Although SALT I restricted the number of ICBM and SLBM launchers, Moscow has been able to substantially improve its strategic capabilities by deploying MIRVed missiles, thereby increasing the total number of ballistic missile warheads from roughly 2,000 to 6,000, and by improving the accuracy and reliability of its strategic ballistic missile forces. [ ]

We also believe that Soviet decisions to comply with provisions of the SALT II Treaty under negotiation at the time may have affected the rate of procurement during the late 1970s and early 1980s. In particular, there is some evidence that suggests that, during 1977 and 1978, the Soviets apparently cut back their deployment programs for the SS-17 and SS-19 ICBMs by about 50 launchers each to remain below the proposed SALT II limit of 820 MIRV-accountable ICBM launchers. They apparently originally planned to deploy 918 of these launchers as part of an overall program to modernize their ICBM forces. As with the SALT I restrictions, however, they have continued to upgrade these systems by developing and deploying improved versions of these missiles, while keeping under the agreed launcher ceiling. [ ]

Finally, we have examined policy decisions related to two other aspects of defense economic activity—the diversion of resources for the production of military hardware for export and investment in the defense industrial base—and concluded that they probably had only a small impact on the procurement trend we have observed in recent years. In the case of military exports, for example, the Soviets have increased substantially in recent years the sale abroad of expensive military hardware. We estimate the ruble value of these exports to have grown 4 to 5 percent annually during 1976-81, a rate more than double the previous five-year period, in large part as a result of sizable deliveries of aircraft and air defense and ground forces equipment to Libya, Syria, and other client states in the Middle East and Africa. Despite the greater resources being devoted to export production, however, its overall size is insufficient—about

10 percent of annual total military procurement during the 1970s—to significantly alter our view that there has been almost no growth in military production since the mid-1970s. [ ]

The Soviets also have committed since the 1970s substantial resources to capital investment in defense-related plant and equipment. As with exports, our estimate of the value of resources associated with the expansion and modernization of all related investment

[ ] does not alter our overall judgment that growth in the Soviet commitment of resources to defense has slowed in the period since 1976. [ ]

#### **Estimated Defense Expenditures in Other Categories**

For the other components of defense spending, our view for the most part has not changed significantly since the last estimate. The trends are reviewed below.

**Personnel.** We estimate that Soviet military manpower has grown at an average annual rate of 2 percent from its 1965 level of 3.2 million men to a present size of approximately 4.4 million. The number of military personnel, however, that do not have national security roles (such as troops involved in railroad and general construction) has grown more rapidly, from 800,000 in 1965 to 1.5 million in 1981. In addition, we estimate that the number of civilian personnel employed by the military has risen from approximately 640,000 in 1965 to 800,000 in 1981. [ ]

The increase in armed forces manpower is primarily the result of the expansion and modernization of the Ground Forces, which accounted for half of the growth since 1965. The increased size of the forces without national security roles is caused primarily by the greater numbers of construction troops, accounting for roughly two-thirds of the growth in this manpower category. [ ]

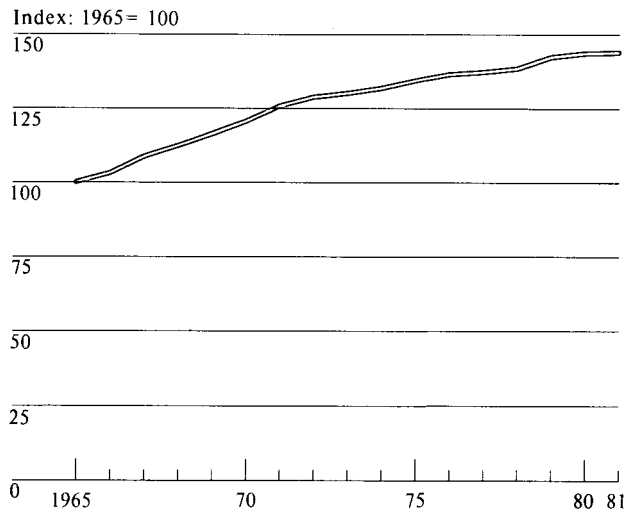
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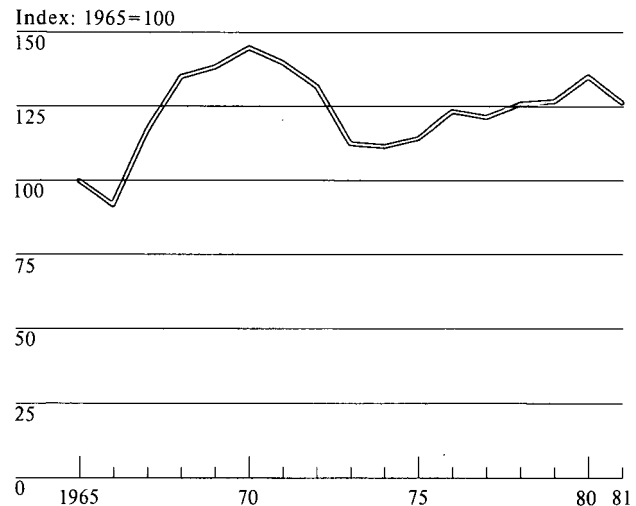
**Figure 9**  
USSR: Growth in Personnel  
Expenditures, 1965-81<sup>a</sup>



<sup>a</sup> Based on estimates in 1970 rubles.

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**Figure 10**  
USSR: Growth in Military Construction  
Expenditures, 1965-81<sup>a</sup>



<sup>a</sup> Based on estimates in 1970 rubles.

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Manpower costs since the 1960s have increased at an average annual rate of slightly less than 2 percent (see figure 9). There was relatively faster growth in the mid- and late 1960s as the buildup along the Sino-Soviet border gained intensity. Growth since the early 1970s is estimated to be considerably slower.

**Construction.** To support the logistic requirements of the expanding Soviet forces, including the military buildup along the Sino-Soviet border, there was a fairly rapid rise in the pace of military construction during the mid- and late 1960s and early 1970s (see figure 10). With these basic requirements now probably satisfied, the rates of growth in construction costs appear to have slowed substantially. This trend also contributes to the slower growth in total estimated defense expenditures since 1975, but the effect is small because construction amounts to only about 3 percent of total defense outlays. Activity since the early 1970s has been directed increasingly toward construction that increases the combat readiness and endurance of military units (for example, personnel

support structures, maintenance buildings, and equipment, vehicle, POL, and ammunition storage facilities) and to the qualitative improvement of existing facilities.

**Operations and Maintenance.** Since 1965 the cost of operating and maintaining the Soviet armed forces has been increasing at a fairly steady rate of 3 to 4 percent annually (see figure 11). This trend is a result of the large additions of weapons and equipment to the forces, and the increasing complexity of the weapons deployed, which have required continually increasing maintenance and support costs.

**RDT&E.** Unlike our estimates of Soviet investment and operating costs, which are based on a direct costing of military activities, our estimates of Soviet expenditures for military RDT&E are made indirectly using published Soviet statistics. These official data

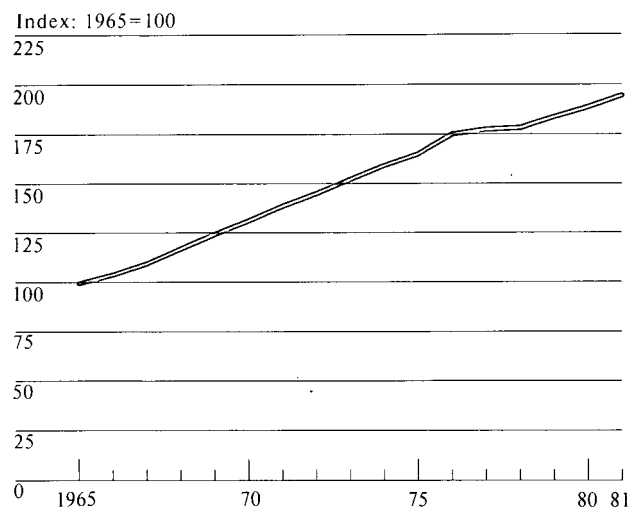
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**Figure 11**  
**USSR: Growth in Operations and**  
**Maintenance Expenditures, 1965-81<sup>a</sup>**



<sup>a</sup> Based on estimates in 1970 rubles.

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are highly aggregated and do not allow us to measure the costs of individual R&D programs. Nor does our methodology allow us to assess the year-to-year impact of unscheduled delays in individual weapons programs, although such disruptions undoubtedly add to RDT&E expenditures in the long run. In short, our RDT&E estimates are subject to a much wider margin of error than our estimates for other categories, especially on an annual basis. Nevertheless, we have a good understanding of the growth in physical scale at R&D facilities and the number of programs under development. Thus, we are confident of the rough trends that we observe in Soviet military R&D during 1965-81. The expenditure data together with observed historical trends in the resources devoted to R&D reflect a long-term Soviet commitment, since at least the mid-1960s, to a vigorous R&D effort. This effort has also included the overt and covert acquisition of Western technology. Our estimate does not take into account the cost savings associated with these activities.

#### Impact of the Change on Estimates of the Defense Burden

Our changed view of procurement growth in recent years has some effect on our assessment of the economic burden of Soviet defense spending. Previously, we reported that Soviet defense spending absorbed between 12 and 13 percent of GNP for most of the 1970s, increasing by a percentage point by 1979 to 13 to 14 percent. In contrast, our new estimate indicates the burden was a relatively constant 13 to 14 percent of GNP since 1965. The greater burden during the late 1960s and the early 1970s is attributable to the higher prices we now associate with certain major weapon systems. This assessment reflects a better understanding of the costs of these systems, resulting in an increase in our estimate of defense spending in absolute terms during 1965-81. The changes in this year's estimate of the physical quantities produced in the late 1970s and early 1980s offset this somewhat. The result is that the burden has remained stable in recent years, as the slower growth in defense spending during this period more or less coincided with slower growth in the economy.

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#### Implications for Future Soviet Defense Programs

The new trend we have observed in Soviet military procurement, together with continuing Soviet economic problems and the recent political succession, raises important questions about the future of the Soviet defense effort. On the basis of the large number of military programs under way in the USSR, we would expect Soviet defense spending to continue to grow in real terms through at least 1985. The question is, however, whether the Soviets will rebound quickly from the slowdown in procurement growth, so that defense spending will return to (or even exceed) the growth rate of 1966-76, or whether the trend of little or no growth in procurement will continue to retard the increase in overall expenditures for some time. Because we do not fully understand the causes of the slowdown, we cannot provide a confident answer. We discuss below some alternative outcomes.

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During the last two leadership successions, major changes in the defense effort occurred after the new leaders consolidated power: Khrushchev cut military spending and restructured forces with emphasis on modernization of strategic systems; Brezhnev gave additional impetus to the across-the-board expansion and modernization of conventional and nuclear capabilities that had begun in the late Khrushchev period. There is no direct evidence that the current leadership is planning major changes in the allocation priority given to defense (or in specific defense programs). But if major shifts were to occur, it might take several years before a clear picture of this change emerged.

Regardless of how the leadership decides to approach the resource allocation issue, it will not be able to avoid it for long. The planning cycle for the 12th Five-Year Plan—1986-90—is already under way. We know from historical precedent that the Soviet military's assessment of the external threat is an essential element in this cycle and will be formally developed during 1983. The Politburo in 1984 will act on this military assessment in allocating resources for the next five-year defense plan.

This will be the new Politburo's first formal and comprehensive ordering of internal priorities between economic investment and defense procurement. The new leadership, which apparently came to power with the support of the military, surely will face pressures from it to at least continue, and possibly to accelerate, the recent rate of increase in defense spending to counter a resurgent Western military effort. Brezhnev, however, in a speech to the military leadership shortly before he died, seemed to rule out a sharper increase in defense spending.

The expansion of Soviet production facilities that occurred during the 1976-80 Plan period suggests that the Soviets have the defense industrial capacity to support an acceleration of the defense effort. Indeed, the Soviets have already introduced more than 40 major new weapon systems since 1981, and we project

that over 60 more could reach initial operational capability by 1985. Over half of the total are of completely new or highly modified design—a larger share than in any five-year period since the mid-1960s. Any major effort to sharply accelerate the level of military procurement, however, could make it even more difficult to solve the fundamental economic problems facing the Soviets. It would require lower civilian investment and slower growth or even a fall in per capita consumption and could, over the long run, erode the economic base of the military-industrial complex itself. Moreover, we do not know how quickly the Soviets will be able to overcome the technical and manufacturing problems that have contributed to the recent procurement slowdown: some appear to be pervasive and will be difficult for the Soviet system to correct.

Some measure of the impact of an accelerated defense effort on the economy can be gleaned using SOVSIM, a large-scale econometric model of the USSR that has been developed within the CIA over the past five years. If the Soviets were to attempt to restore momentum to military procurement by raising growth to 8 percent per year for the remainder of the decade—a rate somewhat above that of the late 1960s but twice as high as the average rate during 1966-76—our simulations suggest that per capita consumption would fall by roughly 3 percent during the last half of the 1980s. Such a decline would undercut efforts by the leadership to accelerate economic growth by using material incentives to complement its discipline campaign.

Although an accelerated defense effort could result in a good deal more military hardware entering the Soviet forces this decade, possibly a more likely scenario would be for military procurement to remain constant or to grow for the next few years at somewhat less than the historic rate of 4 to 5 percent per year during 1966-76. There would still be a substantial upgrading of military capabilities in this case, because the Soviets are already investing so much in

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military hardware that slower growth or indeed merely continuing procurement at the existing level would ensure large increases in their stock of military equipment.

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If the Soviets chose to continue slower growth in military procurement by stretching out some of their programs, they could still continue to maintain and modernize forces in all key strategic areas throughout the decade. Any significant impact on the large stock of Soviet equipment would probably be deferred until the 1990s. Under these circumstances, Andropov might calculate that the economy could be strengthened by greater investment now (at least some of the technical and manufacturing problems could be overcome), allowing a more rapid increase in the growth of defense spending later in the decade.

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Although Andropov seemed to give the greatest weight to the country's economic problems in his keynote address to the CPSU Central Committee Plenum on 22 November 1982, it is too early to tell how he will address the question of resource allocation. Of primary importance to Andropov and his colleagues, should they decide to adopt a policy of little or no procurement growth in the 1986-90 Plan period, would be the knowledge that such a strategy would not diminish the military power of the Soviet Union significantly during this decade and would still allow it to marshal resources quickly to overcome external or internal threats to its security.

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